



## Repair Manual

All 1996 ➤

Fuel System Testing with VAS523005
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Edition 04.2018



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## List of Workshop Manual Repair Groups

### Repair Group

20 - Fuel Supply

Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

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## 20 – Fuel Supply

### 1 EVAP System - Checking for Leaks with Smoke Tester -VAS523005-

(Edition 04.2018)

USA5R507721 - 04.2018

#### Special tools and workshop equipment required

- ◆ Smoke Tester -VAS523005-
- ◆ Connector -VAS523005/4-
- ◆ Connection Set -VAS523005/5-, -VAS523005/6- or -VAS523005/7- (depending on the diameter of the breather line)
- ◆ Plugs -VAS523005/8-
- ◆ Protective eyewear (yellow)
- ◆ Smoke Tester -VAS523005- operating instructions

#### Test Conditions:

- Guided Fault Finding was performed using the Vehicle Diagnostic Tester.
- The Leak Detection Pump -V144- detected a leak.

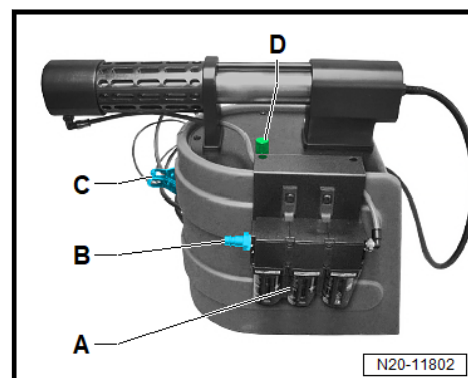
#### NOTICE

**Jetta Hybrid Only - The fuel door release button must be pressed before starting test.**

#### Note

*The "Small leak" DTC means that the total of all leaks is equal to a leak with a diameter greater than 1.0 mm.*

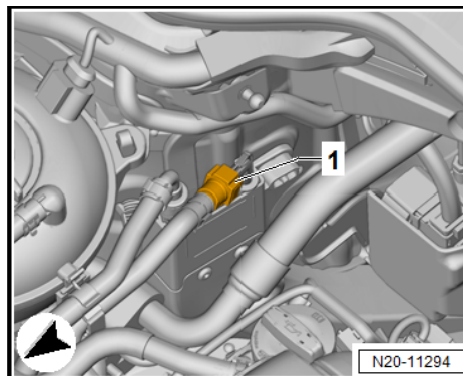
#### Preparing the Smoke Tester -VAS523005-



- Check the water separator -A- on the smoke tester. Drain the water separator if necessary.
- Connect the pressure hose to the connection -B-.
- Use the dipstick -D- to check if there is enough fluid in the Smoke Tester -VAS523005-.



- Connect the power supply for the Smoke Tester - VAS523005- -C- to the jump start point on the vehicle.

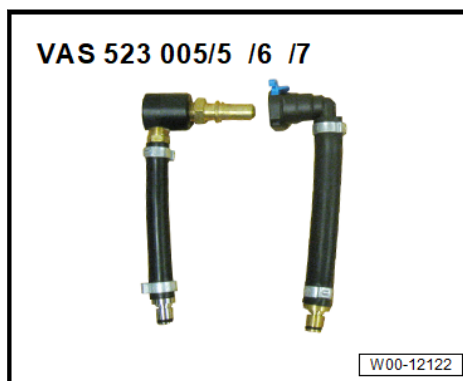


**CAUTION**

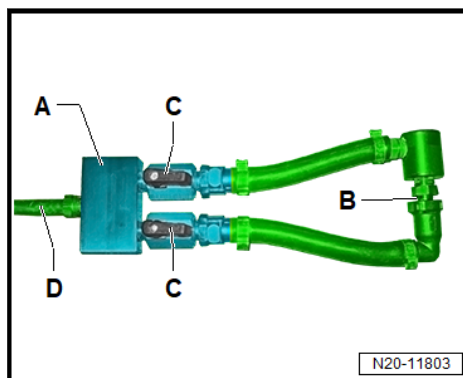
Risk of interchanging the wires.

Risk of injury from fuel spraying out.

- Wear protective eyewear.
  - Wear safety gloves.
  - Only disconnect the white breather line.
- 
- Disconnect the breather line in the engine/motor compartment -1-.
  - Check the breather line for which Connection Set - VAS523005/4, VAS523005/5, or VAS523005/6- must be used according to the diameter.

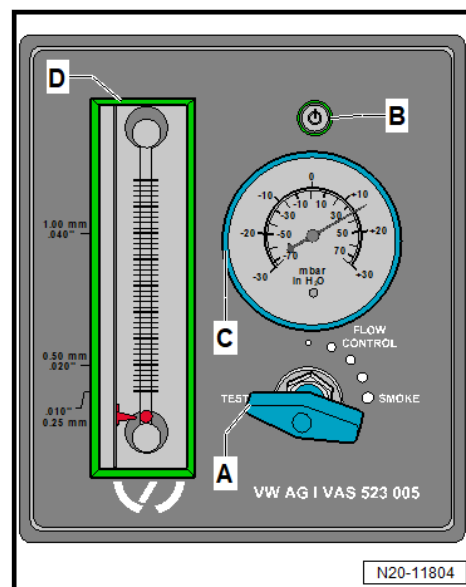


Check the Smoke Tester -VAS523005- and Connection Set -VAS523005/4, VAS523005/5, or VAS523005/6- for leaks:





- Connect the Connector -VAS523005/4- -A- and corresponding Connection Set -VAS523005/4, VAS523005/5, or VAS523005/6- -B- as shown.
- Open the shut-off valve -C-.
- Connect the measuring hose on the smoke tester to the hose -D-.
- Set the valve -A- to “TEST”.

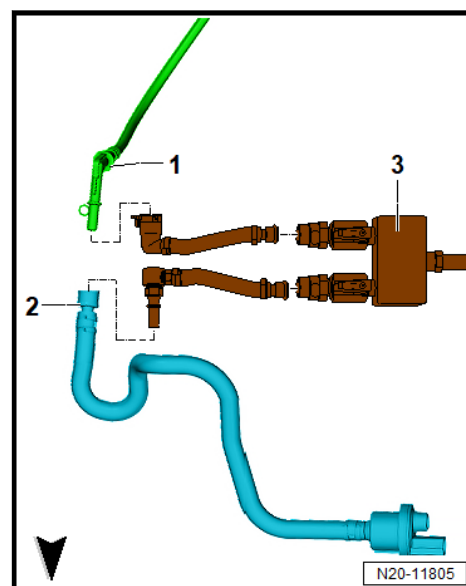


- Switch on the Smoke Tester -VAS523005- -B-. The Connection Set -VAS523005/4, VAS523005/5, or VAS523005/6- will then be filled with smoke.
- Watch the pressure gauge -C- and the flow meter -D-.

If the pressure rises to 35 mbar (0.5 PSI) and the ball in the flow meter sinks to »zero«, then there are no leaks in the Smoke Tester -VAS523005- and the Connection Set -VAS523005/4, VAS523005/5, or VAS523005/6- and they can be used.

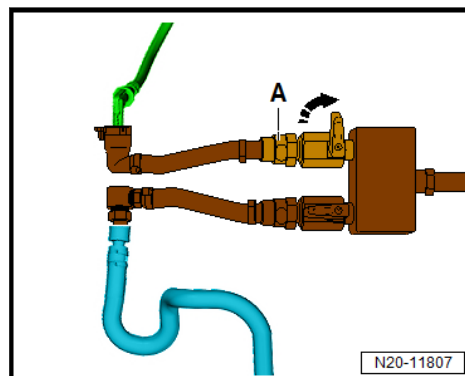
- Switch off the Smoke Tester -VAS523005-.

**Check the EVAP Canister Purge Regulator Valve 1 -N80- for leaks:**

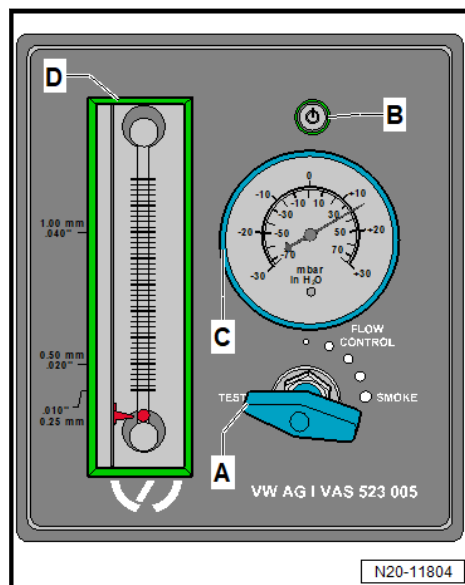




- Connect the Connection Set -VAS523005/4, VAS523005/5, or VAS523005/6- to the breather lines -1- and -2- on the vehicle as shown.
- Connect the measuring hose on the Smoke Tester - VAS523005- to the Connector -VAS523005/4- -3-.
- Close the shut-off valve -A- (line to the EVAP canister).



- Set the valve -A- to “TEST”.



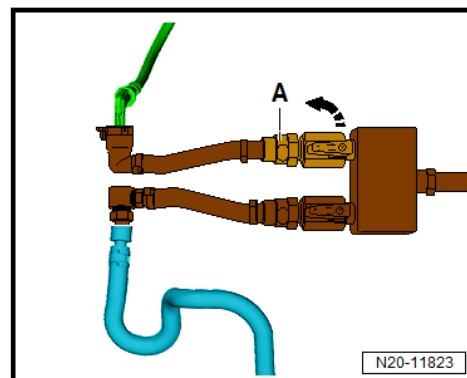
- Switch on the Smoke Tester -VAS523005-. The hose to the solenoid valve will then be filled with smoke.

If the pressure rises to 35 mbar (0.5 PSI) and the ball in the flow meter sinks to »zero«, then the EVAP Canister Purge Regulator Valve 1 -N80- has no leaks and is OK.

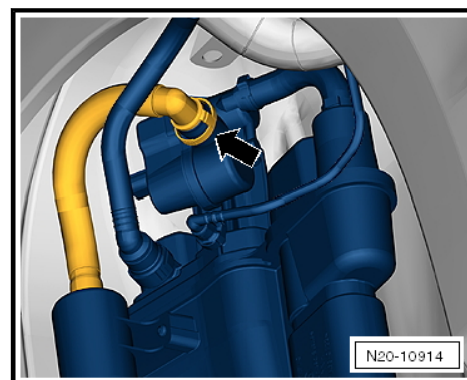
- Switch off the Smoke Tester -VAS523005-.



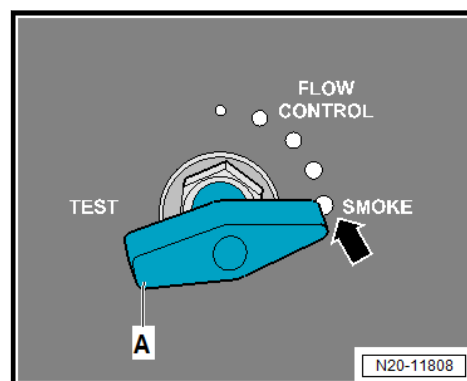
Checking the EVAP canister, fuel tank, and lines for leaks:



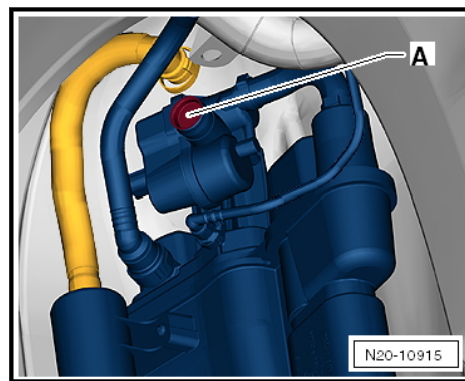
- Open the shut-off valve -A- (line to the EVAP canister).
- Remove right rear wheel housing liner.



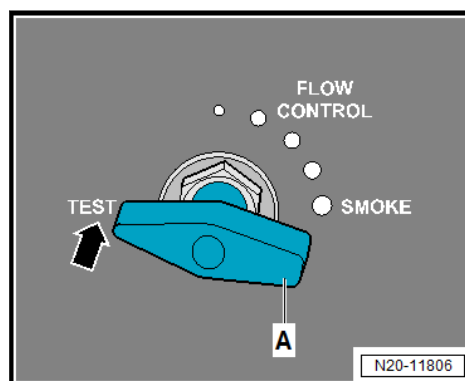
- Remove the hose to the air filter -arrow- from the Leak Detection Pump -V144-.
- Fill the fuel system with smoke by setting the valve -A- to “SMOKE” and switching on the Smoke Tester -VAS523005-.



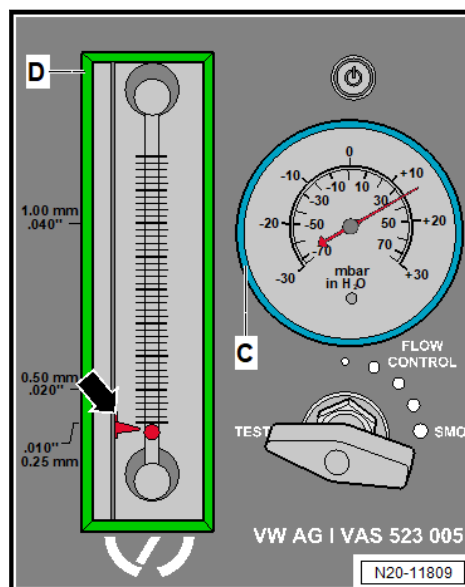
- Allow the fuel system to fill with smoke until smoke escapes from the connection -A- on the Leak Detection Pump.



- If smoke escapes, seal the connection with a Plug - VAS523005/8-.
- Set the valve -A- to “TEST” and continue filling the fuel system.



- Watch the pressure gauge -C- and the flow meter -D-.



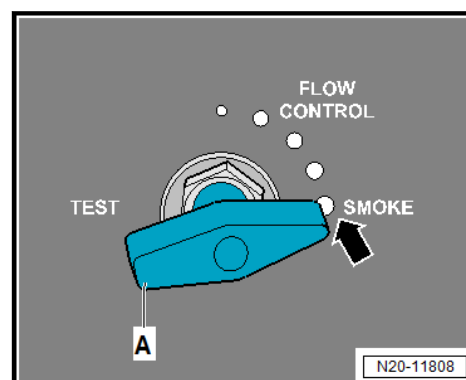
If the pressure rises to 35 mbar (0.5 PSI) and the ball in the flow meter sinks below the »0.25 mm mark« -arrow-, then the fuel system is filled.



## Note

- ◆ *If a sporadic fault is detected, move the lines, hoses, and caps. If the flow meter indicates a change when a component is moved, check that component.*
- ◆ *Depending on the fuel level in the fuel tank, it may take up to five minutes to fill with smoke.*
- ◆ *The Smoke Tester -VAS523005- has an automatic shut-off. The Smoke Tester -VAS523005- may need to be switched on again if it shuts off.*
- Once the flow meter has stabilized, switch the Smoke Tester -VAS523005- off and check the pressure gauge.
- The pressure must not drop below 30 mbar (0.45 PSI) after five minutes.

**If the pressure drops or if no pressure develops, then locate the leak as follows:**



- Set the valve -A- to “SMOKE” and fill the fuel system with smoke.
- Check all the lines, hoses and the fuel filler cap for escaping smoke.
- Shine a flashlight on all components and hoses, because the smoke is more visible in white light.
- Use the laser to narrow down the location of the leak. The laser beam will »light up« in the smoke and be visible.
- The smoke contains a contrast agent. The contrast agent will be visible at the location of the leak under ultraviolet light.
- The installation opening inside the passenger compartment must be opened to check the flange on the fuel pump and fuel filter.
- Replace any leaking hoses or components.

After completing the work, perform the Check tank ventilation system for leaks guided function with the Vehicle Diagnostic Tester.

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# Cautions & Warnings

**Please read these WARNINGS and CAUTIONS before proceeding with maintenance and repair work. You must answer that you have read and you understand these WARNINGS and CAUTIONS before you will be allowed to view this information.**

- If you lack the skills, tools and equipment, or a suitable workshop for any procedure described in this manual, we suggest you leave such repairs to an authorized Volkswagen retailer or other qualified shop. We especially urge you to consult an authorized Volkswagen retailer before beginning repairs on any vehicle that may still be covered wholly or in part by any of the extensive warranties issued by Volkswagen.
- Disconnect the battery negative terminal (ground strap) whenever you work on the fuel system or the electrical system. Do not smoke or work near heaters or other fire hazards. Keep an approved fire extinguisher handy.
- Volkswagen is constantly improving its vehicles and sometimes these changes, both in parts and specifications, are made applicable to earlier models. Therefore, part numbers listed in this manual are for reference only. Always check with your authorized Volkswagen retailer parts department for the latest information.
- Any time the battery has been disconnected on an automatic transmission vehicle, it will be necessary to reestablish Transmission Control Module (TCM) basic settings using the Volkswagen Factory Approved Scan Tool (ST).
- Never work under a lifted vehicle unless it is solidly supported on stands designed for the purpose. Do not support a vehicle on cinder blocks, hollow tiles or other props that may crumble under continuous load. Never work under a vehicle that is supported solely by a jack. Never work under the vehicle while the engine is running.
- For vehicles equipped with an anti-theft radio, be sure of the correct radio activation code before disconnecting the battery or removing the radio. If the wrong code is entered when the power is restored, the radio may lock up and become inoperable, even if the correct code is used in a later attempt.
- If you are going to work under a vehicle on the ground, make sure that the ground is level. Block the wheels to keep the vehicle from rolling. Disconnect the battery negative terminal (ground strap) to prevent others from starting the vehicle while you are under it
- Do not attempt to work on your vehicle if you do not feel well. You increase the danger of injury to yourself and others if you are tired, upset or have taken medicine or any other substances that may impair you or keep you from being fully alert.
- Never run the engine unless the work area is well ventilated. Carbon monoxide (CO) kills.
- Always observe good workshop practices. Wear goggles when you operate machine tools or work with acid. Wear goggles, gloves and other protective clothing whenever the job requires working with harmful substances.
- Tie long hair behind your head. Do not wear a necktie, a scarf, loose clothing, or a necklace when you work near machine tools or running engines. If your hair, clothing, or jewelry were to get caught in the machinery, severe injury could result.
- Do not re-use any fasteners that are worn or deformed in normal use. Some fasteners are designed to be used only once and are unreliable and may fail if used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow the recommendations in this manual - replace these fasteners with new parts where indicated, and any other time it is deemed necessary by inspection.

# Cautions & Warnings

- Illuminate the work area adequately but safely. Use a portable safety light for working inside or under the vehicle. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.
- Friction materials such as brake pads and clutch discs may contain asbestos fibers. Do not create dust by grinding, sanding, or by cleaning with compressed air. Avoid breathing asbestos fibers and asbestos dust. Breathing asbestos can cause serious diseases such as asbestosis or cancer, and may result in death.
- Finger rings should be removed so that they cannot cause electrical shorts, get caught in running machinery, or be crushed by heavy parts.
- Before starting a job, make certain that you have all the necessary tools and parts on hand. Read all the instructions thoroughly; do not attempt shortcuts. Use tools that are appropriate to the work and use only replacement parts meeting Volkswagen specifications. Makeshift tools, parts and procedures will not make good repairs.
- Catch draining fuel, oil or brake fluid in suitable containers. Do not use empty food or beverage containers that might mislead someone into drinking from them. Store flammable fluids away from fire hazards. Wipe up spills at once, but do not store the oily rags, which can ignite and burn spontaneously.
- Use pneumatic and electric tools only to loosen threaded parts and fasteners. Never use these tools to tighten fasteners, especially on light alloy parts. Always use a torque wrench to tighten fasteners to the tightening torque listed.
- Keep sparks, lighted matches, and open flame away from the top of the battery. If escaping hydrogen gas is ignited, it will ignite gas trapped in the cells and cause the battery to explode.
- Be mindful of the environment and ecology. Before you drain the crankcase, find out the proper way to dispose of the oil. Do not pour oil onto the ground, down a drain, or into a stream, pond, or lake. Consult local ordinances that govern the disposal of wastes.
- The air-conditioning (A/C) system is filled with a chemical refrigerant that is hazardous. The A/C system should be serviced only by trained automotive service technicians using approved refrigerant recovery/recycling equipment, trained in related safety precautions, and familiar with regulations governing the discharging and disposal of automotive chemical refrigerants.
- Before doing any electrical welding on vehicles equipped with anti-lock brakes (ABS), disconnect the battery negative terminal (ground strap) and the ABS control module connector.
- Do not expose any part of the A/C system to high temperatures such as open flame. Excessive heat will increase system pressure and may cause the system to burst.
- When boost-charging the battery, first remove the fuses for the Engine Control Module (ECM), the Transmission Control Module (TCM), the ABS control module, and the trip computer. In cases where one or more of these components is not separately fused, disconnect the control module connector(s).
- Some of the vehicles covered by this manual are equipped with a supplemental restraint system (SRS), that automatically deploys an airbag in the event of a frontal impact. The airbag is operated by an explosive device. Handled improperly or without adequate safeguards, it can be accidentally activated and cause serious personal injury. To guard against personal injury or airbag system failure, only trained Volkswagen Service technicians should test, disassemble or service the airbag system.

## Cautions & Warnings

- Do not quick-charge the battery (for boost starting) for longer than one minute, and do not exceed 16.5 volts at the battery with the boosting cables attached. Wait at least one minute before boosting the battery a second time.
- Never use a test light to conduct electrical tests of the airbag system. The system must only be tested by trained Volkswagen Service technicians using the Volkswagen Factory Approved Scan Tool (ST) or an approved equivalent. The airbag unit must never be electrically tested while it is not installed in the vehicle.
- Some aerosol tire inflators are highly flammable. Be extremely cautious when repairing a tire that may have been inflated using an aerosol tire inflator. Keep sparks, open flame or other sources of ignition away from the tire repair area. Inflate and deflate the tire at least four times before breaking the bead from the rim. Completely remove the tire from the rim before attempting any repair.
- When driving or riding in an airbag-equipped vehicle, never hold test equipment in your hands or lap while the vehicle is in motion. Objects between you and the airbag can increase the risk of injury in an accident.

**I have read and I understand these Cautions and Warnings.**